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FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

EXAMINER	
MOORE, IAN N	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/633,575	Applicant(s) GOYAL ET AL.	
	Examiner Ian N Moore	Art Unit 2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 16-18 is/are allowed.

6)☒ Claim(s) 1-15 and 19-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2/24,2/6,7/10.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 2-24-2004,2-6-2004,7-10-2004 was filed after the mailing date of the first office action on 12-17-2003. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to Amendment

2. Claims 1,16,19, 22 and 23 are amended.
3. Claims 1-15 and 19-25 are rejected by the new ground(s) of rejection necessitated by the amendment.

Response to Arguments

4. Applicant's arguments, see page 13-15, filed on 6-21-2004, with respect to Claims 16-18 have been fully considered and are persuasive. The rejection of claims 16-18 has been withdrawn.
5. Applicant's arguments with respect to claims 1-15 and 19-25 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claims 1-15,19-25, the applicant argued that, "...Prieto'228 does not disclose determining whether servicing a request will exceed **a user's maximum quality of service** and servicing the request (or not) based on this determining..." in page 12, paragraph 2.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **a user's maximum quality of service**) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument, the examiner respectfully disagrees that Prieto'228 does not disclose determining whether servicing a request will exceed the maximum quality of service and servicing the request (or not) based on this determining..." Prieto'228 discloses determining that whether servicing the selected request will exceed the schedulable entity's maximum quality of service (**see Fig. 3, Real-time bandwidth estimator 34 and Flow Control Module (FCM) 38; col. 7, line 47 to col. 8, line 34; note that real time bandwidth estimator monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS . According to the determination based upon QoS, the allocation RQM request can be granted/delayed/denied.**), without servicing the request (**see col. 10, line 47-55; since the request does not conform to the PFQ scheduler's criteria, it is not a winner. Thus, the request is delayed/denied**.) or, servicing the request (**see col. 9, line 37-65; since the request conforms to the PFQ scheduler's criteria, it is selected as a winner. Thus, the request is granted/selected**). Note that it is inherent in the art that when a subscriber requests for a service (i.e. telephone service or data service), by default, the subscriber will inherently expects such phone line or data line to have maximum quality of service, where

maximum quality of service parameters are higher line stability, lowest delay, faster data rate, higher/faster bandwidth, and etc. No subscriber will request a phone line or a data line service, which will be down/slow/noisy every hour/day. Moreover, since the claims does not specifically recites "what is the quality of service" and "what parameter are included in maximum quality of service", examiner asserts Prieto'228's QoS as "maximum" quality of service, since Prieto'228's RQM requests inheritably request for "maximum" quality of service.

Regarding claims 19-20, and 22, the applicant argued that, "...Beshi does not discloses, each rate controller adapted to limit the rate at which resource requests selected by scheduler are service to the schedulable entity's maximum service..." in page 17, paragraph 2.

In response to applicant's argument, the examiner respectfully agrees with the applicant that Beshi does not discloses, each rate controller adapted to limit the rate at which resource requests selected by scheduler are service to the schedulable entity's maximum service, since these limitations are taught by Prieto'228, **see Prieto'228 col. 7, line 47 to col. 8, line 34; note that the combined system of real time bandwidth estimator and FCM monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS (i.e. determining whether or not a new user will congest the other traffic)**. As stated above, Prieto'228 RQM request is for the maximum quality of service. Thus, it is clear that the combined system of Prieto'228 and Beshi disclose the claimed the invention set forth in claim 19-20.

Regarding claim 19-20, the applicant argued that, "...applicant does not agree with the examiner that there exists motivation to combines these two references ..." in page 17, paragraph 3.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is to obtain the advantages/benefits taught by Beshi'721 since Beshi'721 states at col. 2, line 41-45 and col.4, line 3-14 that such a modification would make it possible to provide an apparatus to regulate the rate allocation in the network.

Regarding claim 22, the applicant argued that, "...applicant does not agree with the examiner that there exists motivation to combines these three references ..." in page 20, paragraph 1.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21

USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is to obtain the advantages/benefits taught by Beshi'721 since Beshi'721 states at col. 2, line 41-45 and col.4, line 3-14 that such a modification would make it possible to provide an apparatus to regulate the rate allocation in the network. The motivation to combine is to obtain the advantages/benefits taught by Ganmukhi'399 since Ganmukhi'399 states at col. 2, line 52-60 that such a modification would make it possible to implement a scheduler which is a cost effective and handles the QoS requirements of different sessions fairly and efficiently.

Regarding claim 23, the applicant argued that, "...applicant does not agree with the examiner that there exists motivation to combines these two references ..." in page 21, paragraph 3.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is to obtain the advantages/benefits taught by Srinivasan'812 since Srinivasan'812 states at col. 2, line 34-36 that such a modification would make it possible to provide the fair queuing methods/apparatus/software that employ computationally efficient techniques to facilitate efficient hardware and software implementation, and Srinivasan'812 also suggests at col. 12,

line 50-52 that the queue selection method may be implemented using any type of integrated circuit logic or software driven computer-implemented operations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1,4,6,9, and 13-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) in view of Opalka (U.S. 6,259,699).

Regarding claim 1, Prieto '228 discloses a method for scheduling a resource to service a plurality of pending requests (see Fig 5; Uplink DAMA bandwidth allocation requests backlogged) received from a plurality of schedulable entities (see Fig. 1, User Earth terminals, UET), while preventing each schedulable entity from exceeding a maximum quality of service allocated to each schedulable entity, comprising:

selecting a request associated with a schedulable entity (see Fig.5, PFQ-based scheduler 62 selects the winner/request from plurality of wholesaler queues 58; see col. 9, line 56-65), the schedulable entity being associated with the maximum allocation of resources (i.e. bandwidth allocation request) and maximum quality of service (see lines col. 7, line 47 to col. 8, line 34; the scheduler is related/associated with maximum QoS and

maximum allocation of bandwidth. Note that the each request is the request for the maximum quality of service and maximum allocation of bandwidth);

responsive to determining that servicing the selected request will exceed the schedulable entity's maximum quality of service (see Fig. 3, Real-time bandwidth estimator 34 and Flow Control Module (FCM) 38; col. 7, line 47 to col. 8, line 34; note that real time bandwidth estimator monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS . According to the determination based upon QoS, the allocation RQM request can be granted/delayed/denied.), advancing a virtual time for scheduling the requests (see col. 10, line 10-57; note that a virtual time (i.e. virtual time stamp) is estimated and used for each request in ascending order. Thus, when implementing the ascending order, the time must be advanced/incremented. Also, the time-stamp is used as a key for sorting the request, and it is piece-wise monotonically increasing. Thus, it is clear that the virtual time stamp must be incremented whether or not the request is granted.), without servicing the request (see col. 10, line 47-55; since the request does not conform to the PFQ scheduler's criteria, it is not a winner. Thus, the request is delayed/denied.)

Responsive to determining that servicing the selected request does not exceed the schedulable entity's maximum quality of service (see Fig. 3, Real-time bandwidth estimator 34 and Flow Control Module (FCM) 38; col. 7, line 47 to col. 8, line 34; note that real time bandwidth estimator monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request

to a new potential user will effect the QoS or the other user's QoS . According to the determination based upon QoS, the allocation RQM request can be granted/delayed/denied.), servicing the request (see col. 9, line 37-65; since the request conforms to the PFQ scheduler's criteria, it is selected as a winner. Thus, the request is granted/selected) and advancing the virtual time (see col. 10, line 10-57; note that a virtual time (i.e. virtual time stamp) is estimated and used for each request in ascending order. Thus, when implementing the ascending order, the time must be advanced/incremented. Also, the time-stamp is used as a key for sorting the request, and it is piece-wise monotonically increasing. Thus, it is clear that the virtual time stamp must be incremented whether or not the request is granted.).

Prieto'228 does not explicitly disclose a maximum resource allocation being specified as a quality of service.

However, the above-mentioned claimed limitations are taught by Opalka'699. In particular, Opalka'699 teaches a maximum resource allocation being specified as a maximum quality of service (see col. 2, line 49-67; see col. 6, lines 34-57; see col. 21, lines 11-46; note that QoS parameters includes a peak cell rate, which the peak/maximum cell rate or bandwidth. Also note that the peak/maximum bandwidth must correspond to one of the peak/maximum QoS parameter in the ATM system).

In view of this, having the system of Prieto'228 and then given the teaching of Opalka'699, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Prieto'228, by providing the mechanism of a maximum resource allocation being specified as a maximum quality of service, as taught by Opalka'699. The motivation to combine is to obtain the advantages/benefits taught by

Opalka'699 since Opalka'699 states at col. 2, line 46, see col. 3, lines 1-67 that such modification would provide several service categories for different application, and by utilizing QoS, it would provide a mechanism for the network to ensure that values requested by the user and accepted by the network are met. Also, by providing the maximum bandwidth allocation to the subscriber according to maximum reliable QoS, it would increase the customer satisfaction.

Regarding Claim 4, Prieto '228 discloses the request includes a request for network bandwidth (see col. 13, line 35-55; the reservation request is the request that allocates an available time slot on a transmission resources (i.e. network bandwidth)).

Regarding Claim 6, Prieto '228 discloses the request is selected using a fair-share scheduling algorithm (see col. 11, line 24; a PFQ scheduler utilizes the fair scheduling algorithm).

Regarding Claim 9, Prieto '228 discloses the fair-share scheduling algorithm is a hierarchical fair-share scheduling algorithm (see col. 3, line 26-33; MAC controller uses a hierarchical uplink fair scheduling techniques).

Regarding Claim 13, Prieto '228 discloses the maximum quality of service allocated to each schedulable entity is a maximum percentage share of the resource (see col. 10, line 39-55 and see col. 11, line 10-12, 29-30; note that by utilizing the resource fencing, each user

(i.e. schedulable entity) is guaranteed that they will get what they paid for when the network is busy. Thus, each user is receiving the percentage share of the bandwidth (i.e. guaranteed subscription rate). Moreover, if there is any extra bandwidth, it is shared among users according to their QoS percentage (i.e. maximum percentage shared of bandwidth)).

Regarding Claim 14, Prieto '228 discloses a rate controller (Fig. 3 a combined system of Network Flow-Control Module (FCM) 38 and Real-Time Bandwidth Estimator 34) determines if servicing the request will exceed the schedulable entity's maximum quality of service (see col. 7, line 47 to col. 8, line 34; note that the combined system of real time bandwidth estimator and FCM monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS (i.e. determining whether or not a new user will congest the other traffic)).

Regarding Claim 15, Prieto '228 discloses the rate controller determines that servicing the request will exceed the schedulable entity's maximum quality of service, the request remains pending (col. 7, line 47 to col. 8, line 34; note that the combined system of real time bandwidth estimator and FCM monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS (i.e. determining whether or not a new user will congest the other traffic). According to the determination based upon QoS, the allocation RQM request can be granted/delayed/denied. When the

request is not granted (i.e. the PFQ scheduler does not select as a winner), the request must be pending/backlogged in the queues.)

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) and Opalka'699, as applied to claim 1 above, and further in view of Bruno (U.S. 6,434,631).

Regarding Claim 2, Prieto '228 discloses a request as described above in claim 1. Neither Prieto ‘228 nor Opalka'699 explicitly disclose a request to allocate disk space.

However, the above-mentioned claimed limitations are taught by Bruno'631. In particular, Bruno'631 teaches a request to allocate disk space (see Fig. 1, DISK 22; col. 2, line 41- 65; a request of disk space).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Bruno'631, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by further providing a request for disk space, as taught by Bruno'631. The motivation to combine is to obtain the advantages/benefits taught by Bruno'631 since Bruno'631 states at col. 1, line 61-67 that such a modification would make it possible to provide a high cumulative service guarantees, low delay, and good fairness by assigning I/O disk space requests from various system elements to particular domains.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) and Opalka'699, as applied to claim 1 above, and further in view of Collins (U.S. 6,490,670).

Regarding Claim 3, Prieto '228 discloses a request as described above in claim 1. Neither Prieto '228 nor Opalka'699 explicitly disclose a request to allocate memory.

However, the above-mentioned claimed limitations are taught by Collins '670. In particular, Collins '670 teaches a request to allocate memory (see col. 7, line 26-30; a request to allocate memory).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Collins '670, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by further providing a request for memory, as taught by Collins '670. The motivation to combine is to obtain the advantages/benefits taught by Collins '670 since Collins '670 states at col. 2, line 1-20 that such a modification would make it possible to efficiently performing object allocation utilizing request because in the object-oriented environments, the objects are allocated extremely frequently.

9. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) and Opalka'699, as applied to claim 1 above, and further in view of Rhee (U.S. 6,457,008).

Regarding Claim 5, Prieto '228 discloses a request as described above in claim 1.

Neither Prieto '228 nor Opalka'699 explicitly disclose a request for CPU processing cycles.

However, the above-mentioned claimed limitations are taught by Rhee'008. In particular, Rahee'008 teaches for CPU processing cycles (see Fig. 2, Resource Requesters 210 sending requests to the scheduler; col. 3, line 50-54; a request of CPU processing time).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Rhee'008, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by further providing a request for CPU processing time, as taught by Rhee'008. The motivation to combine is to obtain the advantages/benefits taught by Rhee'008 since Rhee'008 states at col. 2, line 52-60 that such a modification would make it possible to allocates schedule resource usage that allows efficient resource sharing with minimal waste of the resource. Such a method will allow greater control over scheduling decisions by a system administrator.

Regarding Claim 12, Prieto '228 discloses each request includes a method further including: limiting the request to a pre-determined upper bound (see col. 10, line 39-55 and see col. 11, line 10-12, 29-30; note that by utilizing the resource fencing, each user (i.e. schedulable entity) is guaranteed that they will get what they paid for when the network is busy. Thus, each user is receiving the percentage share of the bandwidth (i.e. predetermined upper bound guaranteed subscription rate).

Neither Prieto '228 nor Opalka'699 explicitly disclose a requested duration.

However, the above-mentioned claimed limitations are taught by Rhee'008. In particular, Rahee'008 teaches a requested duration (see Fig. 1, process 112-116; and Fig. 5B, requested percentage duration for each users; col. 5, line 56-54; a request of CPU processing time/duration).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Rhee'008, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by further providing a request for CPU processing time/duration, as taught by Rhee'008. The motivation to combine is to obtain the advantages/benefits taught by Rhee'008 since Rhee'008 states at col. 2, line 52-60 that such a modification would make it possible to allocates schedule resource usage that allows efficient resource sharing with minimal waste of the resource. Such a method will allow greater control over scheduling decisions by a system administrator.

10. Claims 7, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) and Opalka'699, as applied to claim 1 above, and further in view of Wallmeier (U.S. 5,748,614).

Regarding Claim 7, Prieto '228 discloses the fair-share scheduling algorithm is as described above in claim 6.

Neither Prieto '228 nor Opalka'699 explicitly disclose a weighted fair shared scheduling algorithm, each weight corresponding to a schedulable entity's minimum quality of service allocation.

However, the above-mentioned claimed limitations are taught by Wallmeier'614. In particular, Wallmeier'614 teaches a weighted fair share scheduling algorithm (see Fig. 2, a weighted Fair Queuing (WFQ)) each weight corresponding to a schedulable entity's minimum quality of service allocation (col. 4, line 12-25; in WFQ, each backlogged stream/queue is served at minimum guarantee service rate (i.e. sustainable cell rate). Thus, each stream/queue is serviced/allocated according to the assigned weight (i.e. assigned QoS for minimum guarantee rate)).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Wallmeier'614, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by providing a mechanism to allocate/service the requests/packets from plurality of queues/streams fairly utilizing their weight/guaranteed rate, as taught by Wallmeier'614. The motivation to combine is to obtain the advantages/benefits taught by Wallmeier'614 since Wallmeier'614 states at col. 2, line 55-67 that such a modification would make it possible to serve a large buffer so that the available transmission bandwidth can be distributed among the different connections in a fair way utilizing "Weighted Fair Queuing (WFQ)" to define a fair scheduling scheme.

Regarding Claim 8, Prieto '228 discloses the minimum quality of service allocated to each schedulable entity is a minimum percentage share of the resource (see col. 10, line 39-55 and see col. 11, line 10-12, 29-30; note that by utilizing the resource fencing, each user (i.e. schedulable entity) is guaranteed that they will get what they paid for when the network

is busy. Thus, each user is receiving the percentage share of the bandwidth (i.e. minimum percentage of the guaranteed subscription rate)).

Regarding Claim 10, Prieto '228 discloses the hierarchical fair-share scheduling algorithm (see col. 3, line 26-33; MAC controller uses a hierarchical uplink fair scheduling techniques.)

Neither Prieto '228 nor Opalka'699 explicitly disclose a weighted fair shared scheduling algorithm, each weight corresponding to a schedulable entity's minimum quality of service allocation.

However, the above-mentioned claimed limitations are taught by Wallmeier'614. In particular, Wallmeier'614 teaches a weighted fair share scheduling algorithm (see Fig. 2, a weighted Fair Queuing (WFQ)) each weight corresponding to a schedulable entity's minimum quality of service allocation (col. 4, line 12-25; in WFQ, each backlogged stream/queue is served at minimum guarantee service rate (i.e. sustainable cell rate). Thus, each stream/queue is serviced/allocated according to the assigned weight (i.e. assigned QoS for minimum guarantee rate)).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Wallmeier'614, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by providing a mechanism to allocate/service the requests/packets from plurality of queues/streams fairly utilizing their weight/guaranteed rate, as taught by Wallmeier'614. The motivation to combine is to obtain the advantages/benefits taught by

Wallmeier'614 since Wallmeier'614 states at col. 2, line 55-67 that such a modification would make it possible to serve a large buffer so that the available transmission bandwidth can be distributed among the different connections in a fair way utilizing "Weighted Fair Queuing (WFQ)" to define a fair scheduling scheme.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) and Opalka'699, and further in view of Chow (U.S. 6,438,134).

Regarding Claim 11, the combined system of Prieto '228 and Opalka'699 discloses the fair-share scheduling algorithm and the virtual time scheduling as described above in claim 1 and 6.

Neither Prieto '228 nor Opalka'699 explicitly disclose is a start-time fair queuing algorithm with virtual time scheduling.

However, the above-mentioned claimed limitations are taught by Chow'134. In particular, Chow'134 teaches a start-time fair queuing algorithm (see col.9, line 60-65; WFQ sub-scheduler utilizes Start-time fair queuing schemed) with virtual time scheduling (see col. 8, line 45-56; utilizing the a time stamping for each queue/packet which is used weighted fair queuing).

In view of this, having the combined system of Prieto '228 and Opalka'699, then given the teaching of Chow'134, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Opalka'699, by providing a start-time fair queuing schemed, as taught by Chow'134. The motivation to combine is to obtain the advantages/benefits taught by Chow'134 since

Chow'134 states at col. 2, line 1-20 that such a modification would make it possible to service a particular queue with the guaranteed allocated service rate during its busy period utilizing the work conserving idle bandwidth scheduler, such as a WFQ scheduler.

12. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) in view of Beshi'721 (U.S. 6,580,721) and Opalka'699.

Regarding claim 19, Prieto '228 discloses a system for scheduling pending resource requests (see Fig 5; Uplink DAMA bandwidth allocation requests backlogged) from a plurality of schedulable entities (see Fig. 1, User Earth terminals, UET) while limiting a maximum recourse allocation allocated to each schedulable entity (see lines col. 7, line 47 to col. 8, line 34; the scheduler is related/associated with maximum QoS and maximum allocation of bandwidth. Note that the each request is the request for the maximum quality of service and maximum allocation of bandwidth), comprising:

(i.e. bandwidth allocation request) and maximum quality of service (see lines col. 7, line 47 to col. 8, line 34; the scheduler is related/associated with maximum QoS and maximum allocation of bandwidth. Note that the each request is the request for the maximum quality of service and maximum allocation of bandwidth);

a plurality of schedulable entity queues (see Fig. 5, Wholesaler queues 58) for holding pending resource requests (see Fig. 5, Backlogged requests), each schedulable entity queue holding resource requests from a schedulable entity (see col. 9, line 38-51; each wholesaler queue contains the RQM messages from the UET);

a scheduler (see Fig. 5, PFQ based Scheduler 62) for selecting resource requests from the plurality of schedulable entity queues (see col. 9, line 56-65; note that PFQ-based scheduler 62 selects the winner/request from plurality of wholesaler queues 58) using a fair-share scheduling algorithm (see col. 11, line 24-26; fair scheduling algorithm), and further adapted to increment a virtual time value each time a resource request is selected (see col. 10, line 10-57; note that a virtual time (i.e. virtual time stamp) is estimated and used for each request in ascending order. Thus, when implementing the ascending order, the time must be advanced/incremented. Also, the time-stamp is used as a key for sorting the request, and it is piece-wise monotonically increasing. Thus, it is clear that the virtual time stamp must be incremented whether or not the request is granted); and

a rate controller associated with the schedulable entity queues (Fig. 3 a combined system of Network Flow-Control Module (FCM) 38 and Real-Time Bandwidth Estimator 34 which couple to queues inside MAC controller), the rate controller adapted to limit the rate at which resource requests selected by the scheduler are serviced to the schedulable entity's maximum quality of service (see col. 7, line 47 to col. 8, line 34; note that the combined system of real time bandwidth estimator and FCM monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS (i.e. determining whether or not a new user will congest the other traffic).

Prieto '228 does not explicitly disclose a plurality of rate controllers associated with the plurality of schedulable entity queues.

However, the above-mentioned claimed limitations are taught by Beshi'721. In particular, Beshi'721 teaches a plurality of rate controllers associated with the plurality of schedulable entity queues (see Fig. 20, a plurality of Service-rate Controllers 144 which corresponds to a plurality of buffers 145 and collection queues 174; see col. 30, line 54-67).

In view of this, having the system of Prieto '228 and then given the teaching of Beshi'721, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Prieto '228, by providing a plurality of rate controllers for each buffer/queue, as taught by Beshi'721. The motivation to combine is to obtain the advantages/benefits taught by Beshi'721 since Beshi'721 states at col. 2, line 41-45 and col.4, line 3-14 that such a modification would make it possible to provide an apparatus to regulate the rate allocation in the network.

Neither Prieto'228 nor Beshi'721 explicitly disclose a maximum resource allocation being specified as a quality of service.

However, the above-mentioned claimed limitations are taught by Opalka'699. In particular, Opalka'699 teaches a maximum resource allocation being specified as a maximum quality of service (see col. 2, line 49-67; see col. 6, lines 34-57; see col. 21, lines 11-46; note that QoS parameters includes a peak cell rate, which the peak/maximum cell rate or bandwidth. Also note that the peak/maximum bandwidth must correspond to one of the peak/maximum QoS parameter in the ATM system).

In view of this, having the combined system of Prieto'228 and Beshi'721, then given the teaching of Opalka'699, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto'228 and

Beshi'721, by providing the mechanism of a maximum resource allocation being specified as a maximum quality of service, as taught by Opalka'699. The motivation to combine is to obtain the advantages/benefits taught by Opalka'699 since Opalka'699 states at col. 2, line 46, see col. 3, lines 1-67 that such modification would provide several service categories for different application, and by utilizing QoS, it would provide a mechanism for the network to ensure that values requested by the user and accepted by the network are met. Also, by providing the maximum bandwidth allocation to the subscriber according to maximum reliable QoS, it would increase the customer satisfaction.

Regarding claim 20, the combined system of Prieto '228, Opalka'699 and Beshi'721 discloses the pluralities of rate controllers as described above in Claim 19. Furthermore, Prieto '228 discloses a rate controller is further adapted to: monitor the servicing of resource requests from the rate controller's associated schedulable entity queue to calculate the quality of service received by the schedulable entity (see col. 7, line 47 to col. 8, line 34; note that the combined system of real time bandwidth estimator and FCM monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS (i.e. determining whether or not a new user will congest the other traffic); and block the servicing of a selected resource request if the schedulable entity's maximum quality of service would be exceeded if the selected resource request was serviced (see col. 10, line 47-55; since the request does not conform to the PFQ scheduler's criteria, it is not a winner. Thus, the request is delayed/denied/blocked.)

In view of this, having the system of Prieto '228 and then given the teaching of Beshi'721, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Prieto '228, for the same way as stated above. The motivation to combine is to obtain the advantages/benefits taught by Beshi'721 for the same reason as stated above in Claim 19.

13. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228), Beshi'721 and Opalka'699, as applied to claim 19 above, and further in view of Wallmeier (U.S. 5,748,614).

Regarding Claim 21, the combined system of Prieto '228, Opalka'699, and Beshi'721 discloses the scheduler uses a fair-share queuing algorithm as described above in claim 19.

Neither Prieto '228, Beshi'721 nor Opalka'699 explicitly each schedulable entity queue is associated with a weight and a weighted fair-share queuing algorithm.

However, the above-mentioned claimed limitations are taught by Wallmeier'614. In particular, Wallmeier'614 teaches each schedulable entity queue is associated with a weight (col. 4, line 12-25; in WFQ, each backlogged stream/queue is served at minimum guarantee service rate (i.e. sustainable cell rate). Thus, each queue/stream is serviced/allocated according corresponding assigned weight (i.e. assigned QoS for minimum guarantee rate) and a weighted fair-share queuing algorithm (see Fig. 2, a weighted Fair Queuing (WFQ)).

In view of this, having the combined system of Prieto '228, Opalka'699 and Beshi'721, and then given the teaching of Wallmeier'614, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined

system of Prieto '228, Opalka'699 and Beshi'721, by providing a mechanism to allocate/service the requests/packets from plurality of queues/streams fairly utilizing their weight/guaranteed rate, as taught by Wallmeier'614. The motivation to combine is to obtain the advantages/benefits taught by Wallmeier'614 since Wallmeier'614 states at col. 2, line 55-67 that such a modification would make it possible to serve a large buffer so that the available transmission bandwidth can be distributed among the different connections in a fair way utilizing "Weighted Fair Queuing (WFQ)" to define a fair scheduling scheme.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228), Beshi'721 (U.S. 6,580,721), in view of Ganmukhi (U.S. 5,850,399) and Opalka'699.

Regarding claim 22, Prieto '228 discloses a hierarchical system (see col. 16, line 11-24; the system utilizes a hierarchical uplink fair scheduling techniques) for scheduling resource requests (see Fig 5; Uplink DAMA bandwidth allocation requests backlogged) from a plurality of child schedulable entities (see Fig. 1, User Earth terminals, UET) while limiting the maximum quality of service allocated to a plurality of parent schedulable entities (see lines col. 7, line 47 to col. 8, line 34; the scheduler is related/associated with maximum QoS and maximum allocation of bandwidth. Note that the each request is the request for the maximum quality of service and maximum allocation of bandwidth,) comprising:

a plurality of child schedulable entity queues (see Fig. 5, Wholesaler queues 58) for holding pending resource requests (see Fig. 5, Backlogged requests), each child schedulable

entity queue holding resource requests from a child schedulable entity (see col. 9, line 38-51; each wholesaler queue contains the RQM messages from the UET);

one or more child schedulers (see Fig. 5, PFQ based Scheduler 62) for selecting resource requests from the plurality of child schedulable entity queues (see col. 9, line 56-65; note that PFQ-based scheduler 62 selects the winner/request from plurality of wholesaler queues 58) using a fair-share scheduling algorithm (see col. 11, line 24-26; fair scheduling algorithm), and further adapted to transmit selected resource requests to a parent schedulable entity queue (see Fig. 6, Retailer Queues 60 which receives the winner from stage 1 (i.e. the output of PFQ scheduler from Wholesaler queues); also see col. 9, line 38-64);

a plurality of parent schedulable entity queues (see Fig. 6, Retailer user queues 60), each parent schedulable entity queue receiving resource requests (see Fig. 6, Quantum requests) from the child schedulable entity queues (see col. 9, line 38-51; each retailer queue (i.e. parent queue) holds the quantum request from a wholesaler queue.), each parent schedulable entity queue holding resource requests received from one of the child schedulers (see Fig. 6, Retailer Queues 60 receives the winner request from stage 1 (i.e. the output of PFQ scheduler from Wholesaler queues); also see col. 9, line 38-64);

a parent scheduler (see Fig. 6, PFQ based Scheduler 64) for selecting resource requests from the plurality of parent schedulable entity queues (see col. 10, line 1-9; note that PFQ-based scheduler 64 selects the winner/request from plurality of retailer queues 60) using a fair-share scheduling algorithm (see col. 11, line 24-26; fair scheduling algorithm), and further adapted to increment a virtual time value each time a resource request is selected (see col. 10, line 10-57; note that a virtual time (i.e. virtual time stamp) is estimated and used for

each request in ascending order. Thus, when implementing the ascending order, the time must be advanced/incremented. Also, the time-stamp is used as a key for sorting the request, and it is piece-wise monotonically increasing. Thus, it is clear that the virtual time stamp must be incremented whether or not the request is granted); and

a rate controller associated with the plurality of parent schedulable entity queues (Fig. 3 a combined system of Network Flow-Control Module (FCM) 38 and Real-Time Bandwidth Estimator 34 which couple to queues inside MAC controller), the rate controller adapted to limit the rate at which resource requests selected by the parent scheduler are serviced to a parent schedulable entity's maximum quality of service (see col. 7, line 47 to col. 8, line 34; note that the combined system of real time bandwidth estimator and FCM monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS (i.e. determining whether or not a new user will congest the other traffic).

Prieto '228 does not explicitly disclose a plurality of rate controllers associated with the plurality of parent schedulable entity queues.

However, the above-mentioned claimed limitations are taught by Beshi'721. In particular, Beshi'721 teaches a plurality of rate controllers associated with the plurality of schedulable entity queues (see Fig. 20, a plurality of Service-rate Controllers 144 which corresponds to a plurality of buffers 145 and collection queues 174; see col. 30, line 54-67).

In view of this, having the system of Prieto '228 and then given the teaching of Rhee'008, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the system of Prieto '228, by providing a plurality of rate controllers for each buffer/queue, as taught by Beshi'721. The motivation to combine is to obtain the advantages/benefits taught by Beshi'721 since Beshi'721 states at col. 2, line 41-45 and col.4, line 3-14 that such a modification would make it possible to provide an apparatus to regulate the rate allocation in the network.

Neither Prieto '228 nor Beshi'721 explicitly discloses receiving from a subset of the child schedulable entity queues.

However, the above-mentioned claimed limitations are taught by Ganmukhi'399. In particular, Ganmukhi'399 teaches receiving from a subset of the child schedulable entity queues (see Fig. 1, MSTCFQ scheduler 80 receives the plurality of selected packets from a portion/subset/part of the queues (i.e. a subset of the child schedulable entity queues) at input 15; col. 4, line 53-65).

In view of this, having the combined system of Prieto '228 and Beshi'721, then given the teaching of Ganmukhi'399, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228 and Beshi'721, by providing a mechanism to receive packets from the portion/subset/part of the input queues, as taught by Ganmukhi'399. The motivation to combine is to obtain the advantages/benefits taught by Ganmukhi'399 since Ganmukhi'399 states at col. 2, line 52-60 that such a modification would make it possible to implement a scheduler which is a cost effective and handles the QoS requirements of different sessions fairly and efficiently.

Neither Prieto'228, Ganmukhi'399, nor Beshi'721 explicitly disclose a maximum resource allocation being specified as a quality of service.

However, the above-mentioned claimed limitations are taught by Opalka'699. In particular, Opalka'699 teaches a maximum resource allocation being specified as a maximum quality of service (see col. 2, line 49-67; see col. 6, lines 34-57; see col. 21, lines 11-46; note that QoS parameters includes a peak cell rate, which the peak/maximum cell rate or bandwidth. Also note that the peak/maximum bandwidth must correspond to one of the peak/maximum QoS parameter in the ATM system).

In view of this, having the combined system of Prieto'228, Ganmukhi'399 and Beshi'721, then given the teaching of Opalka'699, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto'228, Ganmukhi'399 and Beshi'721, by providing the mechanism of a maximum resource allocation being specified as a maximum quality of service, as taught by Opalka'699. The motivation to combine is to obtain the advantages/benefits taught by Opalka'699 since Opalka'699 states at col. 2, line 46, see col. 3, lines 1-67 that such modification would provide several service categories for different application, and by utilizing QoS, it would provide a mechanism for the network to ensure that values requested by the user and accepted by the network are met. Also, by providing the maximum bandwidth allocation to the subscriber according to maximum reliable QoS, it would increase the customer satisfaction.

15. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228) in view of Srinivasan'812 and Opalka'699.

Regarding claim 23, Prieto '228 discloses scheduling a plurality of pending requests (see Fig 5; Uplink DAMA bandwidth allocation requests backlogged) for service from a resource received from a plurality of schedulable entities (see Fig. 1, User Earth terminals, UET), while preventing each schedulable entity from receiving an amount of the resource that exceeds a maximum resource allocated to each schedulable entity (see lines col. 7, line 47 to col. 8, line 34; the scheduler is related/associated with maximum QoS and maximum allocation of bandwidth. Note that the each request is the request for the maximum quality of service and maximum allocation of bandwidth,) comprising:

program code (see col. 12, line 35-40; a program/software application which operates on a demand assigned multiple access system) that selects a request associated with a schedulable entity (see col. 9, line 56-65; note that PFQ-based scheduler 62 selects the winner/request from plurality of wholesaler queues 58) using a fair-share scheduling algorithm (see col. 11, line 24-26; fair scheduling algorithm);

program code that services the request if a rate controller (Fig. 3 a combined system of Network Flow-Control Module (FCM) 38 and Real-Time Bandwidth Estimator 34) determines that servicing the request will not exceed the associated schedulable entity's maximum quality of service (see Fig. 3, Real-time bandwidth estimator 34 and Flow Control Module (FCM) 38; col. 7, line 47 to col. 8, line 34; note that real time bandwidth estimator monitors the available capacity for each and every priority class/connection and aggregate bandwidths and determines whether or not granting a request to a new potential user will effect the QoS for the other user's QoS. According to the determination based upon QoS, the allocation RQM request can be granted); and

program code that advances a virtual time in the fair-share scheduling algorithm (see col. 10, line 10-57; note that a virtual time (i.e. virtual time stamp) is estimated and used for each request in ascending order. Thus, when implementing the ascending order, the time must be advanced/incremented. Also, the time-stamp is used as a key for sorting the request, and it is piece-wise monotonically increasing. Thus, it is clear that the virtual time stamp must be incremented whether or not the request is granted.)

Prieto '228 does not explicitly disclose a computer program product and a computer readable medium that stores program code.

However, the above-mentioned claimed limitations are taught by Srinivasan'812. In particular, Srinivasan'812 teaches a computer program product (see col. 12, line 50-53 and col. 18, line 16-30; a queue section apparatus can be implemented on a computer using any software driven computer implemented operations.) and a computer readable medium that stores program code (see col. 12, line 66 to col. 12, line 16 and col.14, line 22-44; note that the queue selection apparatus/method/program can be stored in the computer. The computer readable medium can be any data storage that can store data.)

In view of this, having the system of Prieto '228 and then given the teaching of Srinivasan'812, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Prieto '228, by implementing the queue selection method/apparatus/software on a computer system by storing the selection software on the computer data storage and operating the selection process utilizing stored application/program, as taught by Srinivasan'812. The motivation to combine is to obtain the advantages/benefits taught by Srinivasan'812 since Srinivasan'812 states at col. 2, line 34-36

that such a modification would make it possible to provide the fair queuing methods/apparatus/software that employ computationally efficient techniques to facilitate efficient hardware and software implementation, and Srinivasan'812 also suggests at col. 12, line 50-52 that the queue selection method may be implemented using any type of integrated circuit logic or software driven computer-implemented operations.

Neither Prieto'228 nor Srinivasan'812explicitly disclose a maximum resource allocation being specified as a quality of service.

However, the above-mentioned claimed limitations are taught by Opalka'699. In particular, Opalka'699 teaches a maximum resource allocation being specified as a maximum quality of service (see col. 2, line 49-67; see col. 6, lines 34-57; see col. 21, lines 11-46; note that QoS parameters includes a peak cell rate, which the peak/maximum cell rate or bandwidth. Also note that the peak/maximum bandwidth must correspond to one of the peak/maximum QoS parameter in the ATM system).

In view of this, having the combined system of Prieto'228 and Srinivasan'812, then given the teaching of Opalka'699, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto'228, Srinivasan'812, by providing the mechanism of a maximum resource allocation being specified as a maximum quality of service, as taught by Opalka'699. The motivation to combine is to obtain the advantages/benefits taught by Opalka'699 since Opalka'699 states at col. 2, line 46, see col. 3, lines 1-67 that such modification would provide several service categories for different application, and by utilizing QoS, it would provide a mechanism for the network to ensure that values requested by the user and accepted by the network are met.

Also, by providing the maximum bandwidth allocation to the subscriber according to maximum reliable QoS, it would increase the customer satisfaction.

16. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228), Srinivasan'812 and Opalka'699, as applied to claim 23 above, and further in view of Wallmeier (U.S. 5,748,614).

Regarding Claim 24, the combined system of Prieto '228, Srinivasan'812 and Opalka'699 discloses the computer program product with the fair-share scheduling algorithm is as described above in claim 23.

Neither Prieto '228, Opalka'699, nor Srinivasan'812 explicitly discloses a weighted fair shared scheduling algorithm, each weight corresponding to a schedulable entity's minimum quality of service allocation.

However, the above-mentioned claimed limitations are taught by Wallmeier'614. In particular, Wallmeier'614 teaches a weighted fair share scheduling algorithm (see Fig. 2, a weighted Fair Queuing (WFQ)) each weight corresponding to a schedulable entity's minimum quality of service allocation (col. 4, line 12-25; in WFQ, each backlogged stream/queue is served at minimum guarantee service rate (i.e. sustainable cell rate). Thus, each stream/queue is serviced/allocated according to the assigned weight (i.e. assigned QoS for minimum guarantee rate)).

In view of this, having the combined system of Prieto '228, Opalka'699 and Srinivasan'812, and then given the teaching of Wallmeier'614, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the

combined system of Prieto '228, Opalka'699 and Srinivasan'812, by providing a mechanism to allocate/service the requests/packets from plurality of queues/streams fairly utilizing their weight/guaranteed rate, as taught by Wallmeier'614. The motivation to combine is to obtain the advantages/benefits taught by Wallmeier'614 since Wallmeier'614 states at col. 2, line 55-67 that such a modification would make it possible to serve a large buffer so that the available transmission bandwidth can be distributed among the different connections in a fair way utilizing "Weighted Fair Queuing (WFQ)" to define a fair scheduling scheme.

17. Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prieto (U.S. 6,381,228), Srinivasan'812 and Opalka'699, as applied to claim 23 above, and further in view of Rahee'008.

Regarding Claim 25, the combined system of Prieto '228, Opalka'699 and Srinivasan'812 discloses a computer program product and program/method code as described above in claim 23. Furthermore, Prieto '228 discloses each request includes the method that limits the request to a pre-determined upper bound (see col. 10, line 39-55 and see col. 11, line 10-12, 29-30; note that by utilizing the resource fencing, each user (i.e. schedulable entity) is guaranteed that they will get what they paid for when the network is busy. Thus, each user is receiving the percentage share of the bandwidth (i.e. predetermined upper bound guaranteed subscription rate). Prieto '228 does not explicitly disclose a requested duration.

Neither Prieto '228, Opalka'699, nor Srinivasan'812 explicitly discloses a requested duration.

However, the above-mentioned claimed limitations are taught by Rhee'008. In particular, Rahee'008 teaches a requested duration (see Fig. 1, process 112-116; and Fig. 5B, requested percentage duration for each users; col. 5, line 56-54; a request of CPU processing time/duration).

In view of this, having the combined system of Prieto '228, Opalka'699, and Srinivasan'812, then given the teaching of Rhee'008, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Prieto '228, Opalka'699 and Srinivasan'812, by further providing a request for CPU processing time/duration, as taught by Rhee'008. The motivation to combine is to obtain the advantages/benefits taught by Rhee'008 since Rhee'008 states at col. 2, line 52-60 that such a modification would make it possible to allocates schedule resource usage that allows efficient resource sharing with minimal waste of the resource. Such a method will allow greater control over scheduling decisions by a system administrator.

Allowable Subject Matter

18. Claims 16-18 are allowed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 571-272-3085. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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BRIAN NGUYEN
PRIMARY EXAMINER